

Message Text

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TO AMEMBASSY BANGKOK

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E.O. 11652: N/A

TAGS: ESCAP, ENRG

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1. FURTHER TO INFO CONTAINED REFTEL, DR. WARD HAS SUGGESTED FORWARDING FOLLOWING CONCLUSIONS AND TENTATIVE REPORT OUTLINE FROM AN AD HOC PANEL DISCUSSION THAT TOOK PLACE 19 APRIL 1972 AT THE NATIONAL ACADEMY OF SCIENCES. INFORMATION BEING SENT BY TELEGRAM TO ENABLE USDEL TO PROVIDE INFO TO OTHER DELS IN ORDER THAT THEY MAY HAVE IT FOR RETURN HOME TO MAKE AVAILABLE TO APPROPRIATE TECHNICIANS IN ESCAP MEMBER COUNTRIES, PARTICULARLY THOSE WHO PARTICIPATE IN ESCAP BIO-GAS WORKSHOPS.

2. GENERAL CONCLUSIONS --

1. THE PANEL AGREED THAT A REPORT ON THIS SUBJECT WOULD BE USEFUL.

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2. THE REPORT SHOULD BE AIMED AT THE DUAL AUDIENCE OF

DECISION MAKERS/PLANNERS AND TECHNOLOGISTS.

3. THE REPORT SHOULD INCORPORATE A DISCUSSION OF UNSOLVED PROBLEMS ASSOCIATED WITH THE GENERATION OF METHANE.

4. IT SHOULD ALSO INCLUDE A DISCUSSION OF FACTORS TO BE CONSIDERED IN ESTIMATING COSTS AND BENEFITS.

5. IT WAS AGREED THAT THE REPORT SHOULD NOT BE LIMITED TO CONSIDERATION OF SMALL, SINGLE-FAMILY INSTALLATIONS, BUT SHOULD INCLUDE DISCUSSION OF LARGER UNITS.

6. FEEDSTOCKS SHOULD NOT BE LIMITED TO WASTE MATERIALS, BUT SHOULD INCLUDE OTHER ORGANIC MATERIALS. NEVERTHELESS, THE PUBLIC HEALTH ASPECT OF USE OF WASTE MATERIALS MUST BE ADDRESSED DIRECTLY.

3. TENTATIVE REPORT OUTLINE --

I. SUMMARY AND RECOMMENDATIONS

II. INTRODUCTION

DISCUSSION OF FERMENTATION PROCESSES. WHY METHANE WAS SELECTED AS SUBJECT FOR STUDY (CONVERSION EFFICIENCY, TERMINAL PRODUCT, NON-STERILE SUBSTRATES, NO MONO-CULTURE, ETC.). HISTORICAL BACKGROUND.

III. OVERVIEW OF METHANE GENERATION SYSTEM.

A. DESCRIPTION (GRAPHIC-FLOW DIAGRAMS)

B. POTENTIAL USES IN DEVELOPING COUNTRIES

C. RAW MATERIALS

D. SCALE CONSIDERATIONS

E. SUMMARY OF ECONOMIC ASPECTS (SEE BELOW)

IV. STATE OF THE ART

A. BIOLOGICAL MECHANISMS (MUST EMPHASIZE THAT IT IS A COMPLEX SERIES OF FERMENTATION PROCESSES, INTER-RELATED AND INTER-DEPENDENT)

ENVIRONMENTAL CONDITIONS

ORGANISMS

B. RAW MATERIALS AND THEIR PREPARATION

DISTRIBUTION OF MICRO-ORGANISMS, SOURCES

EFFECT OF RAW MATERIAL PREPARATION ON PROCESS

C. PRODUCT STORAGE AND UTILIZATION

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QUALITATIVE ASPECTS (MEASURES OF PRODUCT QUALITY?)

QUANTITATIVE ASPECTS (INCLUDING MEASURES OF PRODUCT QUALITY)

D. RESIDUE - STORAGE AND UTILIZATION

E. SANITARY ASPECTS (INCLUDING DISCUSSION OF FATE OF PATHOGENS AND VIRUSES)

F. EQUIPMENT

V. SYSTEM DESIGN AND OPERATION

A. DESIGN CRITERIA (FOR COMPONENTS DESCRIBED IN
III)

1. SIZE - INDEPENDENT

ANAEROBIC SYSTEM
MUST RESIST CORROSION
OTHERS?

2. SIZE - DEPENDENT

MATERIALS OF CONSTRUCTION
LABOR
ENERGY BUDGET (FUEL REQUIRED TO HEAT? MIX?
COMMUNUTE?)
INPUT-OUTPUT (IN RELATION TO USE?)

B. OPERATING CRITERIA

1. PROCESS STABILITY

NUTRIENT DEFICIENCIES (CO, SE, ETC.)
P H
TEMPERATURE
OTHERS?

2. MAINTENANCE OF EQUIPMENT

3. PERFORMANCE MEASUREMENT (QUANTITY AND QUALITY
OF PRODUCT)

4. SAFETY

VI. ECONOMIC ASPECTS

A. RELATE COSTS TO PRODUCTION FUNCTION (END USE
OF CH 4)

B. COST/BENEFIT ANALYSIS (A "HOW TO" SECTION, DES-
CRIBING SPECIFIC ASPECTS OF THIS SYSTEM

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AND HOW THEY SHOULD BE TREATED)

C. RELATIVE VALUE OF RESIDUES (SEE IV E)

D. RESOURCE REQUIREMENTS

1. CAPITAL
2. TECHNICAL SKILLS
3. MANAGERIAL SKILLS

E. RELATIVE VALUE OF METHANE TO OTHER ENERGY SOURCES

VII. IMPLICATIONS FOR IMPLEMENTATION

CONDITIONS (SOCIAL, CULTURAL, POLITICAL) FOR
ACCEPTANCE OR REJECTION (NOTE ALASKA PROJECT)

VIII. RESEARCH AND DEVELOPMENT OPPORTUNITIES. KISSINGER

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